

$A-B-C$: WELDING PATH
 β : REFERENCE PATH
 θ : INCLINATION ANGLE
 ϕ : FORWARD ANGLE

FIG. 3

FIG. 2A

TEACH ROUGHLY BY JOG FEED ONLY POSITIONS A,B...F
WITHOUT PAYING ATTENTION TO THE ORIENTATION

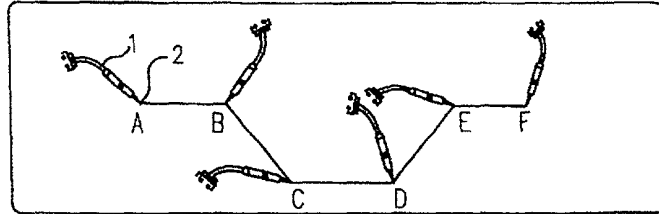


FIG. 2B

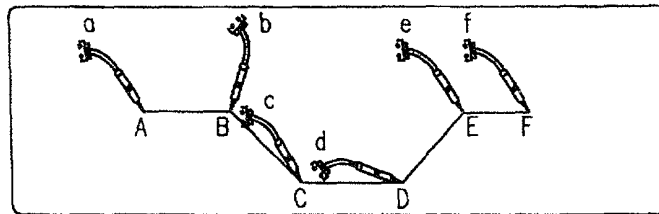
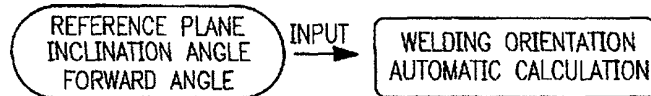
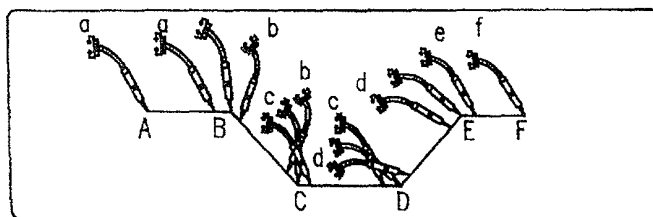


FIG. 2C



ARC WELDING EXECUTION

UTILITY/TORCH ORIENTATION/TRANSFORMATION//////////AXIS////50%/

PROGRAM

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1 TRANSFORMATION SOURCE PROGRAM: [TEST]
2 SCOPE: PART
3 START ROW: 34
4 END ROW: 38
5 PRODUCED/REPLACED: /REPLACED/
6 PROGRAM DESTINED TO BE TRANSFORMED: (UNUSED) [* * * * *]
7 INSERTION ROW: (UNUSED) * * * * *

PAGE IS CHANGED BY SHIFT + DOWN,SHIFT + UP
[SCREEN]

>

FIG. 6

UTILITY/TORCH ORIENTATION/TRANSFORMATION//////////AXIS////50%/

DIRECT INPUTTING TORCH ORIENTATION

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1 REFERENCE PLANE TEACHING: YES
2 P1: /TEACHING EXECUTED /
3 P2: TEACHING EXECUTED
4 P3: TEACHING EXECUTED
5 INCLINATED ANGLE: . 00 deg
6 FORWARD ANGLE: . 00 deg

PAGE IS CHANGED BY SHIFT + DOWN,SHIFT + UP
[SCREEN] TRANSFORMATION REFER TO POSITION STORE POSITION>

FIG. 7

UTILITY/TORCH ORIENTATION/TRANSFORMATION//////////AXIS////50%/

1 NO. OF POSITIONS : /2/
2 PITCH LENGTH : 3.00mm

PAGE IS CHANGED BY SHIFT + DOWN,SHIFT + UP
[SCREEN] EXECUTION

>

FIG. 8

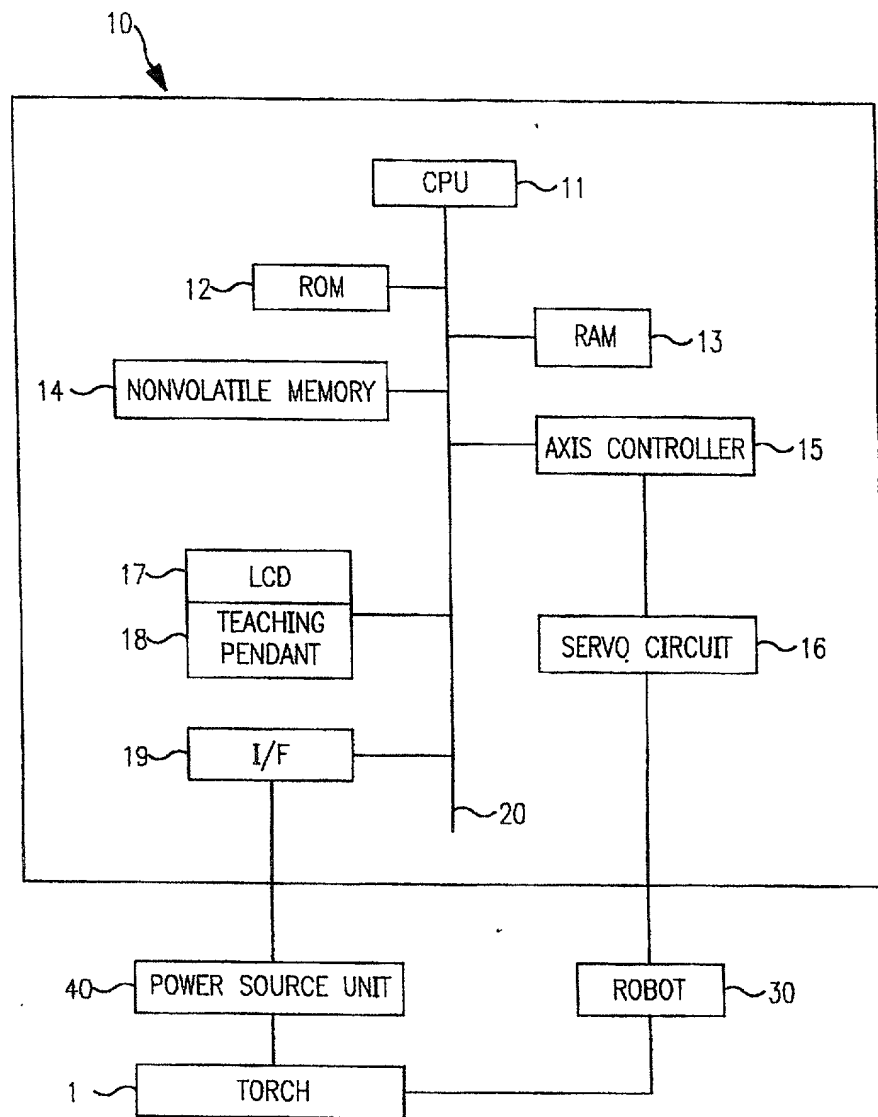


Table 1. Demographic characteristics of the study population	
Age (years)	50.0 ± 10.0
Gender	
Male	50 (50.0%)
Female	50 (50.0%)
Marital status	
Married	40 (80.0%)
Single	10 (20.0%)
Education level	
High school or above	30 (60.0%)
Below high school	20 (40.0%)
Occupation	
White collar	20 (40.0%)
Blue collar	30 (60.0%)
Income (USD/month)	
< 1000	10 (20.0%)
1000-2000	20 (40.0%)
> 2000	20 (40.0%)
Smoking status	
Smoker	10 (20.0%)
Non-smoker	40 (80.0%)
Alcohol consumption	
Regular	10 (20.0%)
Occasional	20 (40.0%)
Never	20 (40.0%)
Family size	
1-2	10 (20.0%)
3-4	20 (40.0%)
> 4	20 (40.0%)
Health insurance	
Yes	40 (80.0%)
No	10 (20.0%)
Comorbidities	
Hypertension	10 (20.0%)
Diabetes	5 (10.0%)
Cholesterol	15 (30.0%)
Obesity	10 (20.0%)
Depression	5 (10.0%)
Other	5 (10.0%)
Medication use	
Yes	10 (20.0%)
No	40 (80.0%)
Stress level	
High	10 (20.0%)
Medium	20 (40.0%)
Low	20 (40.0%)
Sleep quality	
Good	20 (40.0%)
Poor	30 (60.0%)
Dietary habits	
Healthy	20 (40.0%)
Unhealthy	30 (60.0%)
Exercise frequency	
Regular	10 (20.0%)
Occasional	20 (40.0%)
Never	20 (40.0%)
Work-life balance	
Good	10 (20.0%)
Poor	40 (80.0%)
Overall health	
Excellent	10 (20.0%)
Good	20 (40.0%)
Fair	10 (20.0%)
Poor	10 (20.0%)

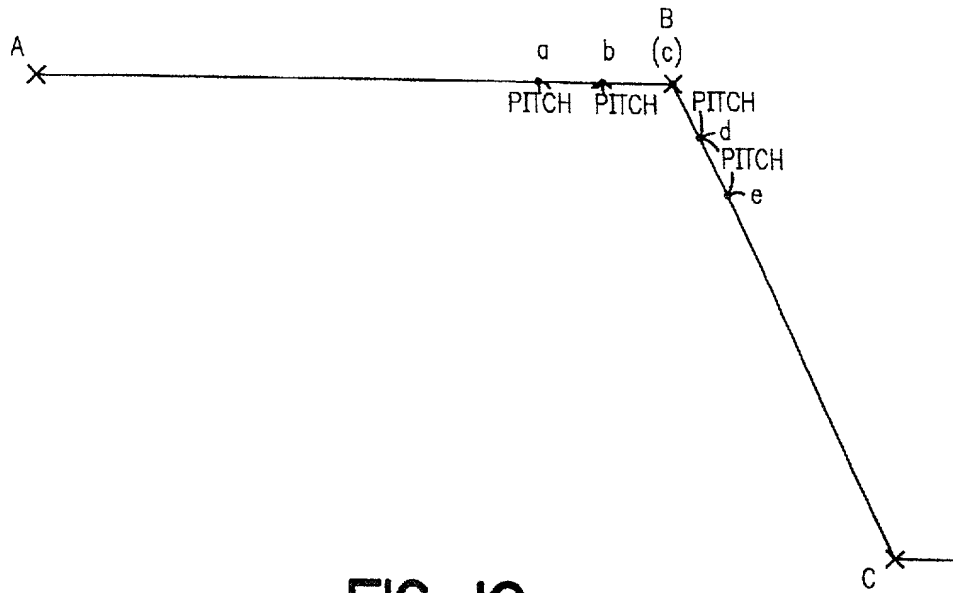


FIG. 10

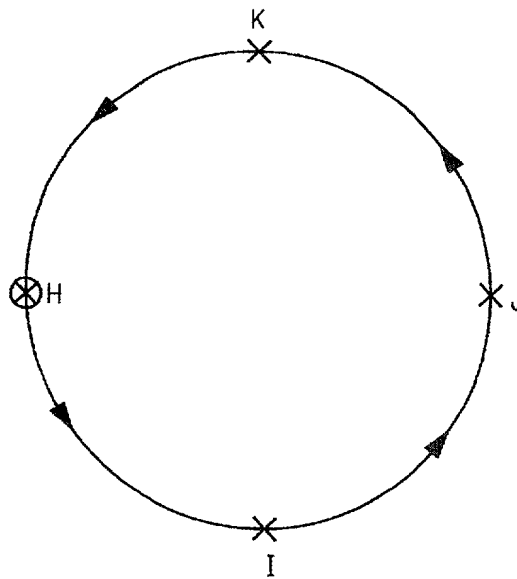


FIG. 11

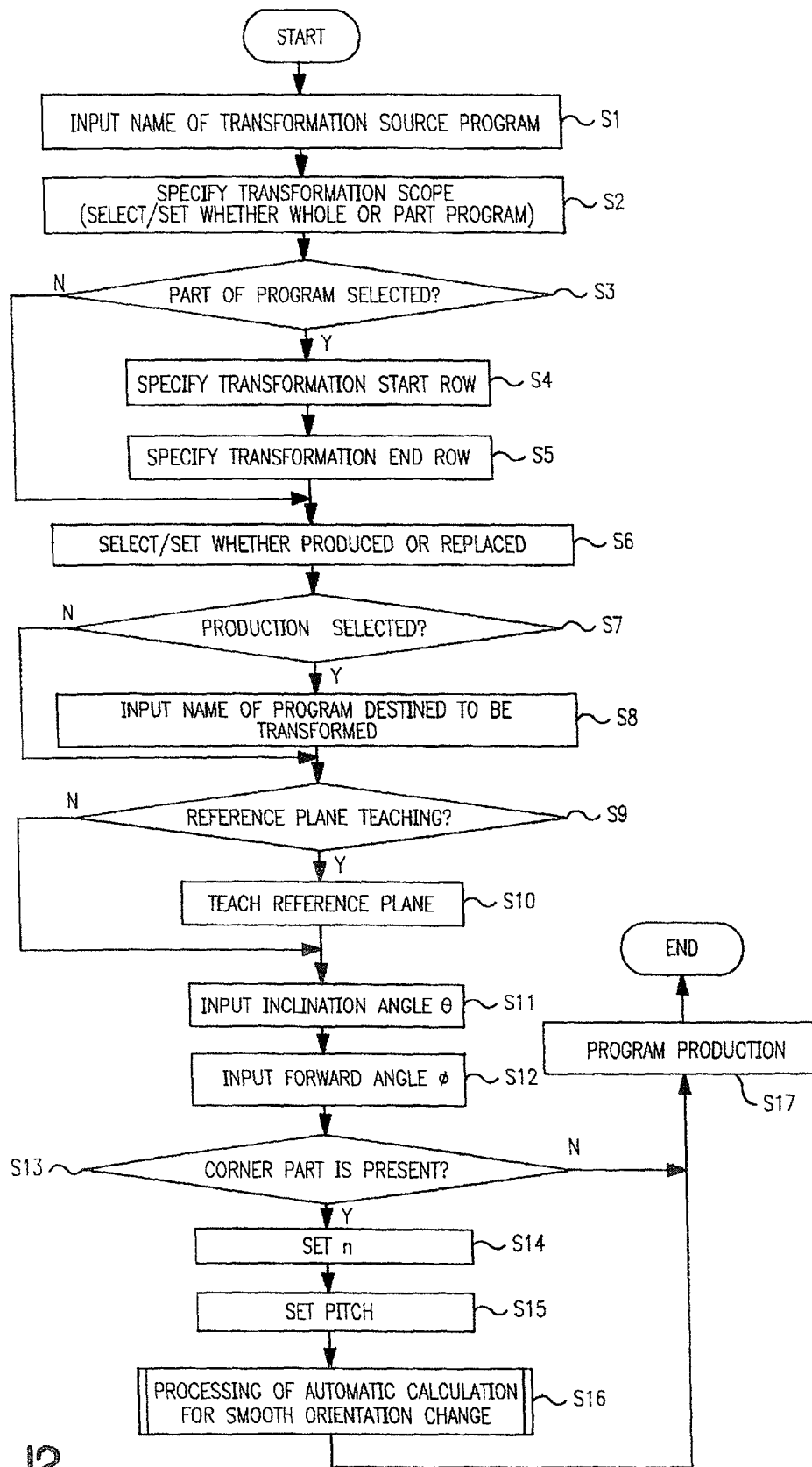


FIG. 12